

WHAT IS CLAIMED IS:

1. An oxygen-removing pre-process for copper interconnect grown by electrochemical displacement deposition is to remove the oxygen in the reaction solution before displacement and deposition a  
5 copper film/conducting wire such that the copper film/conducting wire is grown and has a lower electric resistance.

2. The oxygen-removing pre-process as claimed in claim 1, wherein the oxygen in the solvent is previous removed before mixing the reaction solution.

10 3. The oxygen-removing pre-process as claimed in claim 2, wherein the oxygen in the reaction solution is removed by being boiled.

4. The oxygen-removing pre-process as claimed in claim 3, wherein the reaction solution is insulated to prevent the oxygen in the  
15 air from being dissolved into the reaction solution during cooling.

5. The oxygen-removing pre-process as claimed in claim 4, wherein a container for receiving the reaction solution is closed to insulate the reaction solution received in the container.

6. An oxygen-removing pre-process for copper interconnect  
20 grown by electrochemical displacement deposition removing oxygen in the reaction solution by boiling, the reaction solution insulated to prevent the oxygen in the air form being dissolved into the reaction solution during cooling, the reaction solution mixed with liquid and

provided to the electrochemical displacement deposition for reducing the electric resistance of the grown copper.

7. The oxygen-removing pre-process as claimed in claim 6, wherein the reaction solution is mixed with deionized water.

5           8. The oxygen-removing pre-process as claimed in claim 6, wherein a container for receiving the reaction solution is high-purity cleaned.

9. The oxygen-removing pre-process as claimed in claim 6, wherein is boiled and keeps boiling for two minutes.

10           10. The oxygen-removing pre-process as claimed in claim 6, wherein the reaction solution cools for forty minutes.

11. The oxygen-removing pre-process as claimed in claim 6, wherein the reaction solution is insulated by a polypropylene film.

12. The oxygen-removing pre-process as claimed in claim 6,  
15 wherein one liter reaction solution contains hydrofluoric acid (BOE) for forty milliliters and cupric sulphate ( $\text{CuSO}_4$ ) for four grams.

13. The oxygen-removing pre-process as claimed in claim 6, wherein a Ti metal displacement layer is previously formed on the wafer by sputtering system.

20           14. The oxygen-removing pre-process as claimed in claim 13, wherein the Ti metal displacement layer has a thickness for 3000 Å.